

Captain Joseph Collier, of the s. s. "Cholmley," in the Straits of Gibraltar on the 27th, experienced heavy squalls, with thunder, lightning, and hail, during which the masts, spars, and all pointed objects were tipped with a phosphorescent light.

OPTICAL PHENOMENA.

SOLAR HALOS.

Solar halos were observed in the various states and territories, as follows:

Alabama.—10th.
Arizona.—7th to 10th.
California.—7th, 8th, 9th, 11th, 13th, 15th, 25th, 27th.
Colorado.—7th, 12th, 28th.
Connecticut.—3d, 8th, 11th, 20th.
Dakota.—1st, 8th, 14th, 16th, 17th, 18th, 20th, 23d, 26th.
Florida.—1st, 3d, 8th, 17th, 21st to 24th.
Georgia.—14th, 22d.
Idaho.—8th, 9th.
Illinois.—1st, 6th, 9th.
Indiana.—12th, 17th, 22d, 27th, 30th.
Indian Territory.—21st.
Iowa.—9th, 10th, 11th, 16th, 21st, 22d, 29th.
Kansas.—8th, 9th, 12th, 16th, 21st, 22d.
Kentucky.—12th.
Maine.—11th, 13th.
Maryland.—26th.
Massachusetts.—18th, 31st.
Michigan.—1st, 2d, 8th, 12th.
Minnesota.—4th, 19th, 23d.
Montana.—18th, 25th.
Nebraska.—17th.
Nevada.—10th, 18th.
New Jersey.—18th, 20th.
New Mexico.—16th.
New York.—2d, 8th, 15th, 16th, 18th, 20th, 23d.
North Carolina.—27th.
Ohio.—1st, 12th, 13th, 14th, 20th, 21st, 24th, 30th.
Pennsylvania.—8th, 15th.
South Carolina.—1st, 12th, 23d.
Tennessee.—1st, 6th, 9th, 14th, 17th, 20th, 30th.
Utah.—11th.
Virginia.—1st, 2d, 8th, 15th, 18th.
Washington Territory.—19th.
Wisconsin.—9th, 10th, 12th, 21st, 22d, 23d, 29th.
Wyoming.—1st, 3d, 9th to 13th, 16th, 17th.

LUNAR HALOS.

Lunar halos were observed in the various states and territories, as follows:

Alabama.—17th.
Arizona.—9th, 11th, 15th, 16th, 18th, 20th.
Arkansas.—11th, 16th, 21st.
California.—11th, 13th to 16th, 19th, 20th, 22d, 26th.
Colorado.—10th, 11th, 13th, 14th, 18th, 20th, 25th.
Connecticut.—10th, 16th, 18th.
Dakota.—1st, 13th, 14th, 16th to 20th.
District of Columbia.—12th, 20th, 22d.
Florida.—15th, 17th, 18th.
Georgia.—14th, 17th, 18th, 22d.
Idaho.—11th, 21st, 28th.
Illinois.—17th, 19th, 21st, 22d, 24th, 26th.
Indiana.—14th, 16th, 17th, 19th, 22d.
Indian Territory.—16th.
Iowa.—7th, 12th, 16th, 17th, 21st, 22d, 23d.
Kansas.—8th, 10th, 16th, 20th, 21st, 24th.
Kentucky.—14th, 17th.
Maine.—11th, 16th, 18th, 20th.
Maryland.—12th, 15th, 22d.
Massachusetts.—12th, 16th, 18th, 19th, 20th.
Michigan.—10th, 12th, 13th, 14th, 19th, 21st.
Minnesota.—13th to 18th.
Montana.—14th to 18th, 22d.

Nebraska.—15th, 16th, 17th, 22d, 25th.
Nevada.—10th, 11th, 15th, 24th.
New Hampshire.—11th, 15th, 18th, 24th.
New Jersey.—15th, 18th, 20th.
New Mexico.—10th, 11th, 13th, 15th, 16th, 17th.
New York.—8th, 14th, 15th, 16th, 18th, 20th, 21st.
North Carolina.—17th, 19th.
Ohio.—2d, 10th, 11th, 12th, 14th, 21st, 22d.
Oregon.—17th.
Pennsylvania.—12th, 15th, 19th, 20th.
South Carolina.—12th, 15th, 17th, 18th, 19th.
Tennessee.—14th, 17th, 19th.
Texas.—11th, 12th, 14th, 15th, 16th, 20th, 21st, 22d, 24th, 25th, 26th.
Utah.—25th.
Vermont.—15th, 16th, 18th, 23d.
Virginia.—12th, 13th, 15th, 17th to 20th.
Washington Territory.—15th, 19th.
West Virginia.—12th, 14th, 19th.
Wisconsin.—10th, 19th.
Wyoming.—12th, 15th, 17th, 18th.

The phases of the moon during January were: new moon, 4th, 2.35 a. m.; first quarter, 12th, 7.16 a. m.; full moon, 19th, 2.36 a. m.; last quarter, 26th, 8.23 p. m.; apogee, 6th, 4.01 a. m.; perigee, 19th, 8.02 p. m.

MIRAGE.

Cahuenga Valley, California, 30th.
 Cedar Keys, Florida, 19th.
 Harvard, Nebraska, 25th.
 Fort Grant, Arizona, 24th, 25th, 27th.
 Reidsville, North Carolina, 7th.
 Saint Vincent, Minnesota, 11th, 12th.

MISCELLANEOUS PHENOMENA.

SUN SPOTS.

Prof. David P. Todd, director of the Lawrence Observatory, Amherst, Massachusetts, furnishes the following record of sun spots for January, 1886:

Date— January, 1886. Standard time.	No. of new.		Disappeared by solar rotation.		Reappeared by solar rotation.		Total No. visible.		Remarks.
Gr'ps	Spots	Gr'ps	Spots	Gr'ps	Spots	Gr'ps	Spots		
1, 4 p. m.	1	3				2	20†		
2, 4 p. m.	1	10†	0	5†	1	10†	3	25†	
5, 3 p. m.	0	40†					2	60†	
8, 8 a. m.	1	10†					2	35†	
10, 4 p. m.	0	5†					2	40†	
11, 2 p. m.	0	0	0	0	0	0	2	40†	
12, 3 p. m.	0	15†	0	0	0	0	2	55†	
13, 2 p. m.	1	60†	0	5†	1	15†	4	110†	
14, 4 p. m.	0	10†	0	5†	0	10†	4	115†	
15, 2 p. m.	0	0	1	3	0	0	3	110†	
18, 10 a. m.	2	6					5	85†	
20, 11 a. m.	0	0			0	0	5	20†	
23, 12 m.	0	0			0	0	0	0	
26, 12 m.	0	0	0	0	0	0	0	0	
31, 10 a. m.	1	5	0	0			1	5	

Faculae were seen at the time of every observation.

† Approximated.

Mr. H. D. Govey, of North Lewisburg, Champaign county, Ohio, reports having observed sun spots on the following dates: 1st, 4th, 7th, 11th to 14th, 17th, 19th, 30th.

SUNSETS.

The characteristics of the sky, as indicative of fair or foul weather for the succeeding twenty-four hours, have been observed at all Signal Service stations. Reports from one hundred and sixty stations show 4,933 observations to have been made, of which four were reported doubtful; of the remainder, 4,929, there were 4,349, or 88.2 per cent., followed by the expected weather.

EARTHQUAKES.

Nashua, Hillsborough county, New Hampshire: an earthquake shock of about ten seconds' duration was generally felt in this section of the state at 5.14 p. m. of the 17th; it was accompanied by a noise similar to that made by a heavy wagon drawn rapidly over frozen ground, or deep thunder; vibration, if any, probably from north to south.